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ABSTRACT

This report compares the average annual earnings of teachers to the average annual earnings of college graduates in full-time salaried, nonteaching positions in six states: Alabama, Florida, Georgia, Mississippi, North Carolina, and South Carolina. This is the seventh in a series of annual analyses of wage comparability studies. In addition to comparing average earnings, the report represents several other comparisons between teachers and other college-educated workers, e.g., the growth in earnings throughout a career. One purpose of the analysis is to determine amounts teachers need to be paid to make their salaries equivalent to the earnings of college graduates with similar education and work experience in other occupations, e.g., executives, administrators, and managerial supervisors. It is noted in the conclusion that despite the growth of teachers' salaries over the last 7 years in the Southeast and a slower rate of growth for the earnings of other college-educated workers in the region, teachers' salaries are still not competitive enough to ensure the attraction and retention of adequate numbers of qualified teachers. (JD)

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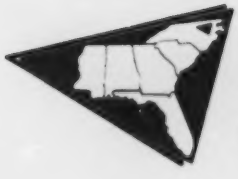
# An Analysis of the Comparability of Teacher Salaries to the Earnings of Other College Graduates in the Southeast: 1990 Update

*by Joseph F. Haenn*
*Southeastern Educational Improvement Laboratory*

**November 1990**



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# RESEARCH REPORT

**An Analysis of the Comparability of Teacher Salaries to the Earnings of Other College Graduates in the Southeast: 1990 Update**

*by Joseph F. Haenn*
*Southeastern Educational Improvement Laboratory*

**November 1990**

Executive Summary

## An Analysis of the Comparability of Teacher Salaries to the Earnings of Other College Graduates in the Southeast: 1990 Update

by Joseph F. Haenn

For the first time in at least a decade, the earnings of teachers have increased dramatically over the last two years when compared to those of other college graduates in the Southeast. Recent salary increases for teachers coupled with lower annual increases for other college-educated workers are becoming evident. These increases bode well for the future quantity and quality of available teachers, but additional teacher salary changes must be implemented to provide teachers with earnings, at all stages of their teaching careers, that are competitive with those in other occupations.

Based on data compiled from the latest U.S. Census Bureau's Current Population Survey (March 1990), this report compares the average annual earnings of teachers to the average annual earnings of college graduates in full-time, salaried, nonteaching positions in the six states (Alabama, Florida, Georgia, Mississippi, North Carolina, and South Carolina) served by the Southeastern Educational Improvement Laboratory (SEIL). This report is the seventh in a series of annual analyses of wage comparability studies.

Public school teacher salaries in the Southeast, especially those of beginning teachers, have risen steadily during recent years. Although average teacher salaries have increased by $10,083 from the 1982-83 school year to the 1989-90 school year, much of this increase has been offset by increases in the earnings of other college-educated workers. Salaries for other college-educated workers have increased by $9,010 during this period; thus, the net gain for teachers is only $1,073. However, in percentage terms, teachers have moved from earning only 64.8 percent of the earnings of other college-educated workers in 1982-83 to earning 76.6 percent of other college-educated workers in 1989-90.

Table 1 shows that while the average teacher in the Southeast earned a salary of $27,468 during the 1989-90 school year, other college-educated workers are

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Table 1
**Growth of Average Earnings of Teachers and Nonteachers in the Southeast**

| | School Year | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1982-83 | 1983-84 | 1984-85 | 1985-86 | 1986-87 | 1987-88 | 1988-89 | 1989-90 |
| Teachers | $17,385 | $18,288 | $20,489 | $22,128 | $23,637 | $24,543 | $25,927 | $27,468 |
| Other College-Educ. Workers | $26,828 | $27,753 | $29,688 | $31,019 | $32,674 | $33,583 | $34,275 | $35,838* |

*Estimated value based on income growth trend of 1982-1989 data.

Sources: American Federation of Teachers, Survey and Analysis of Salary Trends, 1989 and U. S. Bureau of the Census, Current Population Survey, machine-readable data file, March 1983-1990.

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projected to earn over 30 percent more than teachers. The remaining average income difference of $8,370 per year may be a strong disincentive for attracting many competent persons into the teaching profession. It also may encourage talented teachers to leave the teaching profession for other careers.

In addition to comparing average earnings, this report presents several other comparisons between teachers and other college-educated workers. One important comparison is the growth of earnings throughout a career because individuals considering an occupation are interested in how they will be rewarded for increased experience. Table 2 presents a comparison of the distribution of earnings by age for teachers and other college-educated workers. Although the earnings of teachers in the age 20-29 category lag behind by $5,103, the gap is almost twice as large for every other 10-year age group. By the time teachers are in the preretirement 50-59 age category, they earn an average of over $15,000 less per year than other college-educated workers in the Southeast.

Table 2
**Comparison of Earnings of Teachers and Other College-Educated Workers in the Six Southeastern States by Age, 1989**

| Age Cohort: | 20-29 | 30-39 | 40-49 | 50-59 | 60+ |
|---|---|---|---|---|---|
| Teachers | $19,130 | $22,776 | $26,367 | $27,292 | $27,237 |
| Other College-Educated Workers | $24,233 | $31,648 | $38,977 | $42,463 | $36,944 |
| Difference | $ 5,103 | $ 8,872 | $12,610 | $15,171 | $ 9,707 |

Source: U.S. Census Bureau, Current Population Survey, March 1990.

When the average earnings of teachers are compared with those of college graduate salaried workers in other occupations, teachers fare especially poorly. They earn an average of over $14,000 per year less than persons in the occupational category of Executives, Administrators, and Managerial Supervisors. Teachers earn over $10,000 annually less than those in Sales Occupations. When compared to employees in the Professional Services category (where public school teachers are placed), teachers earn an average of over $9,600 less per year. Teachers even earn over $350 less per year than the category of Technical, Clerical, and Other Workers, despite the fact that most occupations in this category do not require a college degree. For example, employees in service occupations--such as waiters, dental assistants, hairdressers, and housekeepers--who possess a college degree earn an average of $1,100 more than teachers. When compared to other specific occupations, public school teachers also earn less than half of what postsecondary teachers make each year (over $25,000 less) and considerably less than other comparable occupations such as salaried accountants/auditors (almost $2,500 less), math and computer scientists (over $11,000 less), and government employees except teachers (almost $6,000 less).

Lower salaries for teachers have been justified by some policymakers because most teacher contracts are only for 10 months or less of the year. However, as

illustrated by Table 3, even after adjusting the earnings of other college-educated workers to reflect a 10-month period, the average teacher earns less except in Florida and North Carolina. Across the southeastern states, average teacher earnings in 1989 were between 75 and 87.9 percent of the average earnings of other college-educated workers, with a regional average of 83.2 percent.

Table 3
**Comparison of Average Earnings of Teachers and Other College-Educated Workers by State, 1989**

| | AL | FL | GA | MS | NC | SC |
|---|---|---|---|---|---|---|
| Teachers* | $25,500 | $28,787 | $28,013 | $24,365 | $27,814 | $26,638 |
| Other College-Educated Workers** | | | | | | |
| 10-month salary | $28,318 | $28,488 | $30,033 | $24,437 | $26,382 | $26,982 |
| 12-month salary | $33,982 | $34,185 | $36,040 | $28,124 | $31,659 | $32,379 |

*American Federation of Teachers, Survey and Analysis of Salary Trends, 1989.
**U.S. Census Bureau, Current Population Survey, March 1990.

Average annual salaries for the 1991-92 school year that are competitive with the earnings of other college-educated workers were computed for each of the six states served by the Southeastern Educational Improvement Laboratory. These average salaries, based on projections from Census Bureau data of the average earnings potential in other occupations employing college-educated workers, are presented in Table 4. Both 10-month and 12-month state average competitive teacher salaries are presented. For those states that base teacher salaries on the regional average, the averages for the Southeast also are provided.

Table 4
**Competitive Average Teacher Salaries for 1991-92, by State and Region**

| | AL | FL | GA | MS | NC | SC | Southeast |
|---|---|---|---|---|---|---|---|
| 10-month | $32,393 | $31,533 | $35,414 | $28,006 | $30,676 | $30,331 | $32,922 |
| 12-month | $38,871 | $37,839 | $42,497 | $33,607 | $36,811 | $36,397 | $39,507 |

Table 5 provides a teacher pay schedule for the 1991-92 school year that would make teacher salaries competitive with the earnings opportunities of college-educated workers in the Southeast. The figures are based on an analysis of growth in earnings using the March 1982-March 1990 Census Bureau data for college graduates in full-time, salaried, nonteaching positions in the Southeast. For each cell in the table, the top figure (in boldface) is based on average earnings for a 10-month period, the length of a typical teaching contract. The bottom figure is based on earnings for a 12-month period, a truer competitive salary.

Table 5
**Competitive Teacher Salary Scale in the Southeast for 1991-92**

| Education Level | Years of Experience | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 | 5 | 10 | 15 | 20 | 25 | 30 |
| B.S./B.A. | **$19,089** | **$23,596** | **$27,361** | **$30,382** | **$32,659** | **$34,193** | **$34,984** |
| Only | $22,906 | $28,316 | $32,833 | $36,458 | $39,191 | $41,032 | $41,981 |
| B.S./B.A. | **$20,175** | **$24,683** | **$28,447** | **$31,468** | **$33,746** | **$35,280** | **$36,071** |
| +18 hours | $24,210 | $29,620 | $34,137 | $37,762 | $40,495 | $42,336 | $43,285 |
| M.S./M.A. | **$22,348** | **$25,770** | **$29,534** | **$32,555** | **$34,832** | **$36,367** | **$37,157** |
| completed | $26,818 | $30,924 | $35,441 | $39,066 | $41,799 | $44,640 | $44,589 |
| M.S./M.A. | **$23,072** | **$27,218** | **$30,983** | **$34,004** | **$36,282** | **$38,093** | **$38,607** |
| +24 hours | $27,687 | $32,662 | $37,180 | $40,805 | $43,538 | $45,712 | $46,328 |
| Doctorate | **$23,435** | **$27,943** | **$31,707** | **$34,728** | **$37,006** | **$38,540** | **$39,331** |
| completed | $28,122 | $33,531 | $38,049 | $41,674 | $44,407 | $46,248 | $47,197 |

To achieve these competitive levels of teacher salaries would require a substantially increased investment in educational funding. For teachers in the Southeast to reach parity in earnings on a 10-month basis (83.3 percent parity) would cost more than $323 million across the region, although three states already have achieved this level. To achieve full earnings parity with other college-educated workers (i.e., earnings on a 12-month basis) would cost almost $2 billion. The estimated costs to achieve different levels of earnings parity by state are presented below in Table 6.

Table 6
**Estimated Additional Annual Expenditures Necessary to Reach Various Teacher Pay Parity Targets**

| | 10/12 Parity | 90 Percent Parity | 100 Percent Parity |
|---|---|---|---|
| Alabama | $ 131,010,000 | $ 222,478,800 | $ 359,682,000 |
| Florida | $ ----- | $ 104,533,095 | $ 449,203,878 |
| Georgia | $ 188,493,510 | $ 345,946,262 | $ 582,125,390 |
| Mississippi | $ 3,690,388 | $ 57,600,315 | $ 138,465,204 |
| North Carolina | $ ----- | $ 73,541,037 | $ 276,329,912 |
| South Carolina | $ ----- | $ 73,328,066 | $ 189,025,074 |
| Regional Totals | $ 323,193,898 | $ 877,427,575 | $ 1,994,831,458 |

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# An Analysis of the Comparability of Teacher Salaries to the Earnings of Other College Graduates in the Southeast: 1990 Update

by Joseph F. Haenn

## Introduction

The amount of money that a teacher can earn strongly affects the ability of public school systems to attract and retain adequate numbers of qualified professionals to teach the children in the Southeast. Of course, there are other factors that attract persons into teaching, such as a need to help others, love of subject matter, desire to work with young minds, job security, etc. However, to attract and retain truly good teachers, states in the region must make teachers' salaries competitive with the earnings opportunities of college graduates in other occupations. "Competitive" means approximately equal in average income and career earnings growth potential. For schools to attract and retain outstanding teachers--that is, persons of greater talent than the average college graduate--schools may have to pay salaries that are even higher than the earnings opportunities of the average college graduate. Otherwise, more highly qualified persons may seek nonteaching alternatives because of higher earnings potential.

At the heart of the issue is the question: How much compensation is really enough? What absolute amount of money do teachers have to be offered today to be comparable with the earnings opportunities available to them in other occupations? The purpose of this research is to determine what amounts teachers need to be paid to make their salaries equivalent to the earnings of college graduates with similar education and work experience in other occupations in the six southeastern states.

This report describes an analysis of data derived from the U.S. Census Bureau's Current Population Survey (CPS), March 1990, the American Federation of

Teachers' (AFT's) Survey and Analysis of Salary Trends, 1989 (1990), and other sources to provide an update of information regarding the comparability of public school teacher salaries in southeastern states to the earnings opportunities of similarly educated persons in other occupations.

There are additional considerations that should be taken into consideration in the final development of any policy aimed at ensuring that teacher salaries are sufficient to attract and retain qualified teachers for our children. This report only addresses one of these issues (i.e., wage comparability) and does not provide a comprehensive look at the entire issue of teacher compensation. This paper also does not address issues such as beginning teacher salaries, the nature of the teacher labor market, the quality of the teaching force, teacher fringe benefits, supplemental earnings of teachers, or the economic feasibility of implementing competitive teacher salaries.

The Southeastern Educational Improvement Laboratory (SEIL) and other organizations have addressed many of these issues in other reports. For example, a study of the supply side of the teacher labor market sponsored by SEIL (Cartledge and Halverson, 1989) reported that fewer newly hired teachers in the Southeast are recent college of education graduates than has been found in previous years. This same study also found that, although teacher turnover rates have increased only slightly, there is a higher percentage of new teachers being hired for reasons such as increased enrollments, lower student/teacher ratios, and other education reform efforts. In other words, the supply of new teachers graduating from colleges of education is smaller than the demand for new teachers, forcing a much larger percentage of the newly hired teachers to be hired out of a dwindling reserve pool of teachers. One policy initiative that could help reverse this trend is to increase the attractiveness of the teaching profession

by making teacher salaries more competitive with the earnings of other college-educated workers.

It should be noted that because the sample size of the observations reported here is determined by the U.S. Census Bureau's Current Population Survey (1990), the number of teachers in the sample is limited. Although a regional sample size of 227 teachers provides an adequate estimate of teacher earnings, we have chosen to use the higher average teacher salaries estimated by the American Federation of Teachers (1990) in its annual survey of teacher salaries. Because these estimates are higher, they provide a more conservative estimate of the discrepancy between the earnings of teachers and other college-educated workers.

This report is the seventh in the series on teacher wage comparability sponsored by the Southeastern Educational Improvement Laboratory and its predecessor organization, the Southeastern Regional Council for Educational Improvement. Except for minor refinements in data definitions and analytical format, this report follows the methods and approaches described in the earlier reports in the series. With the exception of an examination of overall regional differences, data analysis is confined to the six states served by the Southeastern Educational Improvement Laboratory: Alabama, Florida, Georgia, Mississippi, North Carolina, and South Carolina.

**Background**

The southeastern states have made progress in the improvement of teacher salaries in recent years. Table 1 shows the increase of teacher salaries between the 1982-83 and 1989-90 school years for each of the six states served by Southeastern Educational Improvement Laboratory. Average teacher salaries have risen from $17,385 in 1982-83 to $27,468 during the 1989-90 school year. The

overall growth has been at an average annual increase of 6.78 percent for the region. If this growth trend continues, average teacher salaries in the region will reach $31,319 by the 1991-92 school year.

Table 1
Average Annual Teacher Salaries
in the Six Southeastern States

| | School Year | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1982-83 | 1983-84 | 1984-85 | 1985-86 | 1986-87 | 1987-88 | 1988-89 | 1989-90 |
| Alabama | $17,850 | $18,600 | $20,295 | $22,934 | $23,500 | $23,320 | $25,190 | $25,500 |
| Florida | $18,275 | $19,497 | $20,836 | $22,250 | $23,833 | $25,198 | $26,974 | $28,787 |
| Georgia | $17,412 | $18,631 | $20,606 | $23,046 | $24,632 | $25,736 | $26,920 | $28,013 |
| Mississippi | $14,320 | $15,812 | $15,924 | $18,472 | $19,448 | $20,562 | $22,579 | $24,365 |
| North Carolina | $17,585 | $18,311 | $20,812 | $22,476 | $23,775 | $24,900 | $25,646 | $27,814 |
| South Carolina | $16,523 | $17,384 | $20,143 | $21,428 | $23,201 | $24,403 | $25,185 | $26,638 |
| Region | $17,385 | $18,288 | $20,489 | $22,128 | $23,637 | $24,543 | $25,927 | $27,468 |

Source: American Federation of Teachers, Survey and Analysis of Salary Trends, 1989. Regional Composite computed as weighted average of state amounts using numbers of teachers in each state as weights.

While the increase in teacher salaries has been significant, almost half of the increase has been offset by inflation of consumer prices. In real terms (i.e., adjusted for inflation), teacher salaries have grown at an average rate of only 3.3 percent.

Rising teacher salaries, even with inflation adjustments, might have improved the chances of attracting and retaining excellent teachers. However, these modest increases have been offset by the increasing earnings opportunities for college graduates in other occupations. Based on data compiled for this study

and compared to the average simple annual 6.78 percent increase in average teacher salaries, the earnings of college-educated workers in other occupations in the Southeast have risen at an average simple annual rate of 4.56 percent. In absolute terms, teacher salaries have risen by 2.22 percentage points over the earnings of other college-educated workers during the past seven years.

The average annual growth rate for teacher salaries in the Southeast during the past seven years has been influenced primarily by two increases--a 12 percent increase in teacher salaries between 1983-84 and 1984-85 and an 8 percent increase the following year. Since then, the annual growth rate of teacher salaries declined for two years, followed by increases in the last two years. These most recent gains in average teacher salaries were 5.64 percent from 1987-88 to 1988-89 and 5.94 percent from 1988-89 to 1989-90.

Despite some real growth in salaries, teachers remain at an earnings disadvantage compared to other college-educated workers. This disadvantage may negatively impact the quantity and quality of teachers. Focusing only on the percentage growth of teacher salaries without looking at comparative growth misses the heart of the issue.

**Sample Data**

The analysis presented in this report is based upon data compiled from the U.S. Bureau of the Census, Current Population Survey (CPS) (1990), which is conducted on a monthly basis and reported annually each March. The CPS data reflect the earnings experience of survey participants for the prior 12 months and are reported to the public the following March. The most recent data available for analysis were collected through March 1989 and published in March 1990. These data provide estimates of unemployment, employment trends, and household income

for federal economic policy and information purposes. "About 56,500 households . . . containing approximately 115,000 persons 15 years of age and over are interviewed" (U.S. Bureau of the Census, 1990, p. 2-1) from all 50 states. All categories of educational attainment, occupation, age, and employment status were included in the sample.

Use of these CPS data for this series of salary analyses is advantageous for several reasons. First, because the survey is reported annually, it enables the analysis of earnings of nonteacher college graduates to be updated each year, providing policymakers with forecasts of competitive salary levels based on actual (and current) Census data. Second, the CPS data are representative of all households and workers, both nationally and regionally. The size of the total regional sample (N = 1,379 observations) ensures statistically significant estimates of earnings by occupation, educational attainment, and age. Third, each observation is reported by state of residence so that recommendations can be adjusted to reflect any significant differences among states within the region. Finally, each observation has a three-digit occupation identification code for each respondent, which allows for comparisons of earnings across major categories of college-educated workers.

## Sample Characteristics

This report is based on a subset of the national sample that describes full-time, college-educated workers in the six southeastern states served by the Lab. As in previous reports in this series, the data set was analyzed in terms of the average earnings of teacher and nonteacher college graduates relative to age, education, residence (urban versus rural), gender, and race. From the March

1989 CPS data tape (released in March 1990), all observations were extracted of any worker who met the following criteria:

* Resided in Alabama, Florida, Georgia, Mississippi, North Carolina, or South Carolina.
* Was 21 to 65 years of age.
* Was employed on a wage or salary basis--not self-employed.
* Completed at least a four-year college degree.
* Worked at least 40 weeks and an average of at least 35 hours per week during the previous year.
* Earned at least a minimum wage.

Persons under 21 and over 65 years of age were excluded from the data set because their labor market participation patterns are heavily influenced by factors not relevant to the concerns surrounding the teacher labor market.

Individuals who reported self-employment earnings as their principal source of income were excluded from the data set because their earnings include an implicit compensation for risk bearing and a return of self-supplied capital. Because of these additional elements, the earnings of self-employed individuals cannot be compared easily to the earnings expectations for salaried positions such as those of public school teachers.

The coding of the data in the CPS file lists years of education on a scale that indicates attendance in the 12th grade of high school as 12 and attendance of four years of college as 16. Answering a separate question, respondents indicated whether or not they completed the highest grade attended. Only observations showing completion of 16 or more years of education were included in the data set. Therefore, observations were excluded if the subject claimed 16 years of education but responded negatively to the question regarding completion of the highest grade attended. This procedure produced a data set that represents

only actual college graduates. This restriction was adopted because certified public school teachers are required to be college graduates in every southeastern state.

Persons who worked fewer than 40 weeks per year or less than an average of 35 hours per week were excluded because their labor force participation was deemed to be essentially part-time and substantially different from the behavior patterns and earnings opportunities of full-time workers. The data set was further refined to eliminate a number of observations that showed earnings relative to weeks and hours of work inconsistent with minimum-wage laws.

The result of the data compilation process was a data set of 1,152 observations of college graduates who were employed in occupations other than teaching during the year prior to March 1989 and 227 observations of college graduates who were employed as public school teachers. The observations were analyzed in terms of the following variables: occupational category, education, age, race, gender, residence by state and standard metropolitan statistical area (SMSA), number of weeks worked during the previous year, and average hours worked per week. Four broad occupational categories were defined as follows: Management (including executive, administrative, and managerial occupations, such as legislators, chief executive officers, accountants, and personnel specialists); Professional Services (including salaried physicians, lawyers, engineers, social workers, clergy, and college professors); Sales Occupations (including brokers, agents, and sales representatives); and Technical, Clerical and Other Occupations (including equipment repair and maintenance workers, computer operators, secretaries, and all other occupations not included in the first three categories).

Data Limitations

Because the Census data used for this report are based on a survey of individuals, there are certain limitations and cautions that should be observed when analyzing them and interpreting the results. First, the survey is based on personal interviews of individual workers. Therefore, respondents' answers may be subject to errors of memory or misunderstanding.

Second, any sample is subject to random-sampling errors. That is, the characteristics of the sample may not truly match the underlying population. For example, the average of the earnings of college-educated workers in the sample may be different from the true population mean. The magnitude of such error becomes smaller as the sample size increases. The number of observations of teachers and other college-educated workers (i.e, nonteachers) in the study for each state is shown in Table 2. The sample size used for this report (1,379 observations) is large enough to provide highly reliable estimates of the characteristics of the underlying population at the regional level.

Table 2
Number of Observations in Sample

| State | Teachers | Other College-Educated Workers |
|---|---|---|
| Alabama | 15 | 64 |
| Florida | 67 | 446 |
| Georgia | 16 | 103 |
| Mississippi | 22 | 69 |
| North Carolina | 74 | 371 |
| South Carolina | 33 | 99 |
| Total | 227 | 1,152 |

These state sample sizes may be inadequate for independent inference of state-level teacher earnings in some states in the region. This caution espeially applies to Alabama and Georgia because these states have the smallest teacher sample sizes relative to population. The teacher sample size for North Carolina greatly exceeds expectations in proportion to its population. These sampling anomalies occurred because the Census sampling frame was not based on sampling individual occupations. Also, overall sample sizes for Alabama and Mississippi are quite small, representing these states' smaller populations.

Because of the sample size limitations for some states, this report deals primarily with regional findings. State-level data obtained from an analysis of the CPS data are presented, where practical, only as a matter of interest and are subject to the caveat regarding sample size. Fortunately, inference of teacher earnings by state from the CPS data is not necessary because reliable information on teacher earnings is available from other sources, such as state education department records and the annual American Federation of Teachers' salary survey. The most recent AFT data (American Federation of Teachers, 1990) are used for most comparisons.

Another shortcoming of the data is the lack of a direct measure of years of work experience in the CPS data set. Human capital theory suggests that because of the increased productivity that is developed by on-the-job learning and practice, earnings should increase as a worker accumulates work experience (Becker, 1975). Unfortunately, the CPS sample data do not include any information regarding years of experience in the current occupation or even in all occupations. For this reason, age is used as a proxy for experience in the following analyses since it is the only data point available in the CPS data set that relates to the experience factor.

Actual years of work experience may increase more slowly than chronological age because of periods of nonemployment for some workers. Such a bias in the data would exist only if teachers experienced significantly more time out of work than nonteachers, relative to age. Because the teaching profession is predominantly female, it might be reasonable to assume that teachers have fewer years of experience in the paid work force because women, on average, take more time away from paid work (i.e., have less tenure) than do men (Carey, 1988). However, "women with the greatest tenure generally [are] those who [pursue] traditional careers, such as elementary school teachers" (Carey, p. 5). In addition, the pattern of participation by females in the labor force "has now shifted to an inverted 'U' and thus is very similar to that for men," (Shank, 1988, p. 3) with the gap between men and women closing rapidly. Even if there were a tenure bias, no data are available for making such a comparison of age/experience ratios in this present study, and no such adjustment was made for the analysis described in this report.

Data reported in previous reports in this series from the 1982 through 1988 CPS surveys were used in conjunction with the 1989 data to establish a time trend for the growth of earnings of nonteacher college graduates. This time trend was applied to the 1989 data to derive forecasts of earnings levels through 1992 in an effort to provide data relevant to the policy decisions that states need to make to set teacher salary levels for the 1991-92 school year. The report includes estimates of average salary levels, parity ratios between teacher salaries and nonteacher earnings, and increases in state expenditures necessary to bring teacher salaries up to 80 percent, 90 percent, and 100 percent parity with earnings of other college-educated workers.

**Data Analysis**

Table 3 summarizes the demographic characteristics of teachers and other college-educated workers in the 1988 CPS sample for the southeastern states. The data in Table 3 show that teachers and other college-educated workers are similar in age and education levels although teachers are slightly older and more educated. The major differences are found in the categories of gender, race, and place of residence. The teacher sample includes more female and black workers and more workers residing in rural areas than the general sample of college-educated workers.

Table 3
Demographic Characteristics

| | Teachers (n = 227) | Other College-Educated Workers (n = 1,152) |
|---|---|---|
| Mean Age (years) | 39.6 | 37.9 |
| Gender (percent female) | 76.6% | 36.5% |
| Race (percent black) | 25.6% | 9.7% |
| Residence (percent rural) | 41.4% | 18.1% |
| Education(# years post BA) | .76 | .67 |

Source: U. S. Census, Current Population Survey, March 1990.

The data in Table 3, compared with data from the five previous studies in the series (See Appendix A), illustrate a teacher population that is slightly older and better educated, much more rural and female, and more frequently black than other college-educated worker populations in the region. Comparatively, the 1989 CPS sample of teachers from the Southeast is older, more rural, and has more blacks than most previous years. Conversely, other

college-educated workers are younger, more female, and less rural than in previous years.

Average Annual Earnings

Table 4 compares the growth of average earnings of college-educated workers in occupations other than teaching to the earnings of teachers. The nonteacher data were compiled from the CPS data for 1983-1989. The nonteacher earnings for 1990 through 1992 were estimated by adding the average annual growth rate of nonteachers' earnings for 1983-1989 (4.56 percent) to the data for 1988-89 for each succeeding year. Likewise, the teachers' earnings for 1990-91 and 1991-92 were estimated by adding the average annual growth rate of teachers' earnings for 1982-83 through 1989-90 (6.78 percent) to the data for 1989-90 and the succeeding year.

By comparing the CPS data estimates of nonteacher earnings to the American Federation of Teacher estimates of teacher salaries in Table 4, one obtains an estimate of the deficiency of teacher salaries compared to the earnings opportunities of other college-educated workers. According to the CPS data, in 1988-89 the annual earnings of other college-educated workers increased by only slightly more than 2 percent over the previous year--greatly enhancing the relative status of teachers. However, despite the large percentage gains in teacher salaries since 1982-83, a significant pay gap still remains. Even though the projected percent increase for 1989-90 for other college-educated workers is less than that for teachers, in absolute dollars the salary deficiency of teachers will increase. However, even these recent gains are now being threatened by serious revenue shortfalls and budget woes in many of the states in the region.

Table 4
Growth of Earnings of Teachers and Nonteachers
in the Six Southeastern States

| | School Year | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1982-83 | 1983-84 | 1984-85 | 1985-86 | 1986-87 | 1987-88 | 1988-89 | 1989-90 | 1990-91 | 1991-92 |
| Other College-Educated Workers | $26,828 | $27,753 | $29,688 | $31,019 | $32,674 | $33,583 | $34,275 | $35,838[1] | $37,472[1] | $39,181[1] |
| Percent Change | | 3.45 | 6.97 | 4.48 | 5.34 | 5.04 | 2.06 | 4.56 | 4.56 | 4.56 |
| Teachers | $17,385 | $18,288 | $20,489 | $22,128 | $23,637 | $24,543 | $25,927 | $27,468 | $29,745[2] | $32,211[2] |
| Percent Change | | 5.19 | 12.04 | 8.00 | 6.82 | 3.83 | 5.64 | 5.94 | 6.78 | 6.78 |
| Salary Deficiency | $ 9,443 | $ 9,465 | $ 9,199 | $ 8,891 | $ 9,037 | $ 9,040 | $ 8,348 | $ 8,370 | $ 7,727 | $ 6,970 |
| Percent Change | | 0.23 | -2.81 | -3.35 | 1.64 | 0.03 | -7.65 | .03 | -7.68 | -9.80 |

[1]Estimated value based on average annual growth rate of other college-educated workers, 1982-1988.
[2]Estimated value based on average annual growth rate of teachers, 1982-83 through 1989-90.

Sources: American Federation of Teachers, Survey and Analysis of Salary Trends, 1989 (for teacher salary data 1982-83 through 1989-90) and U. S. Bureau of the Census, Current Population Survey, machine-readable data file, March 1983-1990 (other college-educated workers data).

The earnings data for college-educated workers in the Southeast were analyzed for a number of specific categories of occupations. Table 5 shows the results of that analysis. The first column of the table shows the actual average earnings for each occupation from the March 1990 CPS data. These amounts represent earnings during the previous (1988-89) year. The figures in the second column (1992) are estimates of earnings for March 1992 based on a projection of the 1983-1989 trends in earnings growth. These amounts should be interpreted carefully because the numbers of observations on which they are based (given in parentheses) are quite small for several specific occupations.

Physicians and postsecondary teachers lead the nonteacher group (i.e., not public school teachers) in earnings. The "Manager" category is a broad grouping of specific occupations including executive officers, office and program administrators, managers of operational facilities (e.g., a single store location), and management-related occupations. In the subcategory of management-related occupations, salaried accountants and auditors had an average income of $32,571. This may seem low unless one considers that there are noncertified accounting workers and auditors in addition to certified public accountants (CPAs). Many accounting and auditing jobs held by college graduates in government and industry involve less training and responsibility than that associated with CPAs.

The high earnings of persons in "Sales Occupations" ($34,884), particularly those in the subcategory of sales representatives ($36,921), are noteworthy because employers in these fields recruit persons with strong interpersonal skills. These characteristics also are associated with good teachers. If current trends continue, the earnings of persons in sales occupations will average $39,877 by March 1992.

Table 5
Average Earnings by Occupation Category for College Graduate Salaried Workers in the Southeastern Region
(Based on CPS Survey Data)

| | March 1989 | Estimated 1992 |
|---|---|---|
| Public School Teachers (227)* | $24,121 | $27,574 |
| All Nonteacher College Graduate Salaried Workers (1,152) | $34,275 | $39,181 |
| Executives, Administrators and Managerial Supervisors (351) | $38,340 | $43,828 |
| Salaried Accountants/Auditors (39) | $32,571 | $37,233 |
| Professional Services other than Teaching (367) | $33,748 | $38,578 |
| Salaried Physicians (16) | $51,542 | $58,919 |
| Salaried Lawyers (17) | $39,550 | $45,210 |
| Postsecondary Teachers (26) | $49,298 | $56,354 |
| Engineers (78) | $42,993 | $49,147 |
| Math and Computer Scientists (23) | $35,524 | $40,609 |
| Sales Occupations (149) | $34,884 | $39,877 |
| Sales Representatives (97) | $36,921 | $42,206 |
| Technical, Clerical, and Other (285) | $24,508 | $28,016 |
| Service Occupations (36) | $25,224 | $28,834 |
| All Private-Sector Employees (872) | $34,005 | $38,872 |
| Government Employees Except Teachers (280) | $29,903 | $34,183 |

*The estimate of teacher salaries for 1988-89 by the American Federation of Teachers was $27,468. The numbers in parentheses are the number of observations in the sample.

Source: U. S. Bureau of the Census, Current Population Survey, March 1990, machine-readable data file.

The category of "Professional Services" is particularly noteworthy because it is the Census Bureau's occupational category that includes public school teachers. The average earnings of professional service workers other than public school teachers reported in March 1989 ($33,748) was significantly higher than average teacher salaries in the 1988-89 school year ($24,121).

Two occupational subcategory comparisons are appropriate because they generally employ persons with about the same levels and types of training. Postsecondary teachers earn an average per year that is more than double that of public school teachers ($49,298 versus $24,121). On the average, government employees, except those who are teachers, earn almost $5,800 more per year than public school teachers.

Finally, the "Technical, Clerical, and Other" category includes all other occupations. Most of these other occupations do not require a college degree. However, even employees in this category earn an average of $387 more per year than public school teachers. Persons in service occupations--a subcategory including such occupations as barbers, hairdressers, nursing aides, dental aides, waiters, child-care workers, and cooks--earn over $1,100 more per year than do public school teachers.

Table 6 compares CPS data on the average earnings of nonteaching college graduates with AFT data on average teacher salaries for each southeastern state. The ratios of the earnings of teachers to those of nonteachers indicate that teacher salaries are less than 88 percent of the earnings of other college-educated workers in each state and are less than 78 percent in two states. This deficiency may have negative repercussions for teacher recruitment and retention in the Southeast. However, each state made gains during the past year, with half of the states increasing this ratio by .10.

Table 6
Comparison of Average Earnings of College Graduate Salaried Workers by State, 1989

| | Teachers | Other College-Educated Workers | Difference | Ratio* | Change in Ratio 1988-89 |
|---|---|---|---|---|---|
| Alabama | $25,500 | $33,982 | $ 8,482 | .750 | +.079 |
| Florida | $28,787 | $34,185 | $ 5,398 | .842 | +.120 |
| Georgia | $28,013 | $36,040 | $ 8,027 | .777 | +.082 |
| Mississippi | $24,365 | $28,124 | $ 3,759 | .866 | +.176 |
| North Carolina | $27,814 | $31,659 | $ 3,845 | .879 | +.107 |
| South Carolina | $26,638 | $32,379 | $ 5,741 | .823 | +.035 |
| Southeast | $27,468 | $33,008 | $ 5,540 | .832 | +.101 |

*Ratio = $\frac{\text{Teacher Salary}}{\text{Earnings of Other College-Educated Workers}}$

Sources: American Federation of Teachers, Survey and Analysis of Salary Trends, 1989 (teacher data) and U. S. Bureau of the Census, Current Population Survey, March 1990, machine-readable tape records (other college-educated workers).

CPS data also were analyzed for teachers and other college-educated workers in other regions (Table 7). Teacher earnings in Table 7 were computed using CPS data, not the AFT data included in the previous table. Regional average teacher earnings range from slightly more than $23,000 in the Southwest and Mid-continent regions to more than $29,000 in the Mid-East and Far West regions. A different pattern exists for the average earnings of other college-educated workers. While teachers earn only about two-thirds of the earnings of other college-educated workers in the Southwest, they earn more than 83 percent of the earnings of nonteachers in the Northwest and Far West.

Table 7
Comparison of Average Earnings of College Graduate Salaried Workers by Region, 1989

| | Teachers | Other College-Educated Workers | Difference | Ratio* |
|---|---|---|---|---|
| Northeast (CT, ME, MA, NH, NY, RI, VT) | $27,413 [243]** | $37,037 [1,640] | $ 9,624 | .740 |
| Mid-East (DE, DC, MD, NJ, PA) | $29,184 [189] | $37,883 [1,455] | $ 8,699 | .770 |
| Appalachia (KY, TN, VA, WV) | $24,930 [ 97] | $34,502 [ 447] | $ 9,572 | .723 |
| Southeast (AL, FL, GA, MS, NC, SC) | $24,121 [227] | $33,008 [1,152] | $ 8,887 | .731 |
| North Central (IL, IN, IA, MI, MN, OH, WI) | $27,732 [261] | $35,738 [1,598] | $ 8,006 | .776 |
| Mid-Continent (CO, KS, NE, MO, WY, ND, SD) | $23,137 [148] | $31,375 [ 807] | $ 8,238 | .737 |
| Southwest (AK, LA, NM, OK, TX) | $23,101 [188] | $34,835 [ 844] | $11,734 | .663 |
| Northwest (AK, HI, ID, MT, OR, WA) | $28,294 [127] | $33,468 [ 623] | $ 5,174 | .845 |
| Far West (AZ, CA, NV, UT) | $29,414 [115] | $33,468 [ 841] | $ 5,834 | .834 |
| United States | $26,356 [1,595] | $35,182 [9,415] | $ 8,826 | .749 |

*Ratio = $\frac{\text{Teacher Salary}}{\text{Earnings of Other College-Educated Workers}}$

**Numbers in brackets refer to the number of observations in the CPS data.

Source: U. S. Bureau of the Census, Current Population Survey, March 1990 machine-readable tape records.

Overall, teachers earned 75 percent of the earnings of other college-educated workers in the U.S.--up about 3 percentage points from last year. All

regions except the Northeast exhibited decreases in the differences between salaries and increases in their ratios compared to last year's results. Teachers earn about 73 percent of the earnings of nonteachers in the Southeast, slightly below the national average.

Variability of Career Earnings

Another consideration that may affect the ability of schools to recruit qualified teachers is the variation in earnings among persons within occupational categories. The variation of earnings within a sample may indicate the range of earnings growth that a person in an occupation can expect over the course of a career.

Table 8 provides a variation index for earnings of teachers compared to those of other college-educated workers in the Southeast. This index is computed by dividing the standard deviation of the earnings for each occupational category by the standard deviation of earnings for teachers in the sample data. The earnings of professional service workers other than teachers showed 2.61 times more variation than teacher earnings. The earnings of workers in sales occupations varied 3.32 times more than teacher earnings. These results indicate that a person entering a career in engineering, accounting, management, sales, or other fields can expect to realize much larger income growth over the length of a career than can teachers. In other words, the range of teacher salaries is more restricted, and there is less variability in growth of teacher income.

The relatively poor earnings growth potential for teachers also is revealed in the distribution of earnings across age categories. This difference between earnings potential for teachers and workers in other occupations is important because the opportunity for income growth based on increasing productivity and

Table 8
Variation of Earnings by Occupation
Southeastern Region, 1989

| Occupational Category | Variation Index* |
|---|---|
| Teachers | 1.00 |
| Professional Services Other Than Teaching | 2.62 |
| Management and Administration | 3.09 |
| Sales Occupations | 3.32 |
| Technical, Clerical, and Other Occupations | 2.15 |
| All Private Sector Employees | 3.04 |
| Government Employees Except Teachers | 2.19 |

*Variation Index = $\frac{\text{Standard Deviation for Occupation}}{\text{Standard Deviation for Teachers}}$

Source: U. S. Bureau of the Census, Current Population Survey, March 1990, machine-readable data file.

experience may influence the decision of capable individuals to choose other careers over teaching. Table 9 features a comparison of teacher and nonteacher earnings categorized by age categories, as well as other characteristics. Note that although the difference between teacher and nonteacher earnings is about $5,000 before age 30, it becomes marked for older and more experienced worker groups reaching more than $15,000 before retirement.

Table 9 also compares teacher and nonteacher earnings on the basis of gender, race, place of residence, and educational level. Data indicate that in the year ending March 1989, teachers did not earn more than nonteachers in any category. The least earnings differential is among black college graduates, where those working as public school teachers earned an average of only $271 less than black college graduates working in nonteaching occupations. This finding is not an

anomaly in the data. It has been observed in each of the past seven years in CPS survey data. The difference may be partly explained by the differences in the age distribution of black college graduates in teaching and nonteaching occupations. Black college graduates in nonteaching occupations are significantly younger and, therefore, probably less experienced, than the average college graduate worker ($X^2 = 11.52$, $df = 4$, $p < .001$).

Table 9
Earnings Categorized by Characteristics
Southeastern Region, 1988

| | Teachers | Non-teachers | Difference |
|---|---|---|---|
| Earnings by Age | | | |
| Age 20-29 | $19,130 | $24,233 | $ 5,103 |
| Age 30-39 | $22,776 | $31,648 | $ 8,872 |
| Age 40-49 | $26,367 | $38,977 | $12,610 |
| Age 50-59 | $27,292 | $42,463 | $15,171 |
| Age 60+ | $27,237 | $36,944 | $ 9,707 |
| Earnings by Gender | | | |
| Female | $22,829 | $24,077 | $ 1,278 |
| Male | $28,360 | $38,132 | $ 9,772 |
| Earnings by Race | | | |
| Black | $23,984 | $24,255 | $ 271 |
| White | $24,167 | $33,951 | $ 9,784 |
| Earnings by Residence | | | |
| Rural | $22,043 | $28,547 | $ 6,504 |
| Urban | $25,589 | $33,951 | $ 8,407 |
| Earnings by Education | | | |
| BA Degree only | $22,342 | $30,814 | $ 8,472 |
| BA plus one full year | $25,478 | $31,446 | $ 5,968 |
| BA plus two full years | $26,603 | $38,439 | $11,836 |

Source: U. S. Bureau of the Census, Current Population Survey, March 1990, machine-readable data file.

Table 9 also demonstrates the economic disadvantage of females and persons living in rural areas. However, in both cases female teachers and rural teachers

are more competitive with nonteachers than are their male and urban counterparts. The lack of an economic reward for additional education also is clearly demonstrated; nonteachers are rewarded more for each additional year of higher education.

Regression Analysis

Calculating the actual difference between teachers' salaries and their earnings opportunities in other occupations is more complex than is implied by the simple comparison of group average earnings. Teachers typically have completed more postbaccalaureate education than other college graduates (see Table 3). This difference should be reflected in any estimation of their earnings alternatives because, although incomes in general tend to rise with educational attainment, they do not do so at the same rate for teachers.

Teachers and the general population of working college graduates also differ in other ways that may affect earnings, such as age or work experience and gender and racial characteristics. Although these characteristics also are linked to earnings differences, it is inappropriate to use differences based on historical gender and race discrimination to set teacher pay.

To analyze these differences and incorporate them appropriately into the estimation of teacher earnings opportunities, a multiple regression analysis of the Census Bureau's 1989 CPS data was performed. This analysis provided the data to develop a model that accounts for the differential impact of education, experience, and demographic and economic variables. The model estimates the earnings opportunities of college graduates in nonteaching occupations by substituting into the regression model values specific to the teacher work force. These estimates are the amounts that average teacher salaries should equal to make teacher earnings

competitive with those of other occupations in which persons with the same demographic characteristics (e.g., average age, gender distribution, racial composition) work.

Table 10 presents the statistical results of the multiple regression analysis performed on the 1989 CPS data. Dummy variables were used for five of the six southeastern states (FL, GA, MS, NC, and SC) to account for differences in average earnings between states, controlling for differences in the demographic and economic characteristics of the observations from each state. Too few observations were included from Alabama to allow for individual state estimation so this state was explicitly defined. The regression analysis results define a linear equation that relates characteristics of a group to the predicted average earnings in nonteaching occupations. The model includes instrumental variables for three of the four occupational categories: management (MGMT), professional services (PROF), and SALES. The "all others" category was defined implicitly. A dummy variable for teachers (TEACH) was included among these independent variables.

Other variables in the equation include place of residence status (RURAL--rural or urban), GENDER (male or female), ETHNICITY (black or nonblack), AGE, the square of age (AGESQR), years of postgraduate education (HIGHGRAD), number of weeks worked during the prior year (WEEKS), and average hours worked per week during the prior year (HOURS).

The mean values of each of the variables indicate the proportion of total observations for college-educated workers in each category or the average for that variable. For example, 56.9 percent of the college-educated workers were male, 12.3 percent were black, 22 percent lived in rural areas, their average age was 38.16 years, and they worked an average of 51.5 weeks and over 44 hours per week.

Table 10
Regression Analysis Summary
College Graduates' Earnings Opportunities
in Nonteaching Occupations
Southeastern Region, 1989 Current Population Survey

Data for 1,379 observations of college graduate workers in six southeastern states, March 1989. Data compiled from U. S. Census Bureau, Current Population Survey, March 1990, machine-readable data file.

Linear multiple regression model

Dependent Variable: Annual Earnings (Mean = $31,544.94)

Number of Observations: 1,379

Constant term - 76594.32532

| Variable | Mean | Coefficient | t-Statistic | Significance |
|---|---|---|---|---|
| TEACH | .165 | 1391.22570 | .948 | .3431 |
| MGMT | .255 | 8909.14058 | 6.953 | .0000 |
| PROF | .266 | 5502.78704 | 4.314 | .0000 |
| SALES | .108 | 6194.50286 | 3.839 | .0001 |
| RURAL | .220 | -4502.98319 | -3.910 | .0001 |
| GENDER | .431 | -9000.07631 | -9.628 | .0000 |
| ETHNICITY | .123 | -2206.92326 | -1.660 | .0971 |
| AGE | 38.158 | 1715.12872 | 5.236 | .0000 |
| AGESQR | 1557.147 | -15.93431 | -4.063 | .0001 |
| HIGHGRAD | 16.682 | 1164.58093 | 2.298 | .0217 |
| WEEKS | 51.507 | 702.58961 | 3.278 | .0011 |
| HOURS | 44.261 | 318.74094 | 5.252 | .0000 |
| NC | .323 | -2269.23836 | -1.184 | .2368 |
| SC | .096 | -2426.67181 | -1.089 | .2764 |
| GA | .086 | 2797.61585 | 1.227 | .2199 |
| FL | .372 | -1894.35332 | -0.986 | .3244 |
| MS | .066 | -4829.56115 | -1.754 | .0797 |

Standard Error of Estimate = 15560.96279

$R^2$ = 0.29875

The coefficients of the occupational variables indicate the respective differences in the predicted earnings of management, professional, or sales workers

versus the predicted earnings of all other college-educated workers. The coefficient of the variable MGMT indicates a $8,909 addition to the predicted annual income of a college graduate who is employed in a management occupation compared to that of workers in other occupational areas. Thus, the model, as formulated, can be used to estimate earnings opportunity in any one of the occupational categories or to predict the earnings for the composite of all nonteaching occupations. The positive coefficients for the occupational categories of teaching, management, professional services, and sales indicate an earnings advantage in comparison with the college-educated workers in the technical, clerical, and other category.

The occupational category including technical and clerical workers was not identified as an explicit independent variable in the regression equation. This category includes all college-educated workers in occupations other than the identified ones (Teacher, Management, Professional Services, and Sales). The positive coefficient for TEACH indicates that teacher salaries tend to be higher (on average $1,391 more) than salaries of otherwise similar persons in the technical, clerical, and other categories of occupations. However, actual teacher salaries are lower than those for the category of technical, clerical, and other occupations by an average of $387 (see Table 5 on page 16) because of differences in the demographics of these two work forces (e.g., different ethnic and gender composition). Even though many of the occupations in the technical, clerical, and other occupational groups do not require college graduate skills, noncollege graduates were not included in the CPS subsample selected for this analysis. However, college graduates employed in technical, clerical, and other occupations earn more money than do teachers.

The negative coefficient for the variable RURAL indicates the negative impact of $4,503 less earnings for rural residents. The coefficient of the variable GENDER indicates the negative impact of $9,000 for females. The coefficient for the variable ETHNICITY indicates the negative impact of $2,207 for blacks.

Therefore, living in a rural area, being female, and being black all had negative effects on earnings. The values indicate the relative income disadvantage associated with those characteristics compared to the null alternatives (not black, metropolitan area resident, and male).

The coefficient of AGE is positive (plus $1,715), but the coefficient of the square of age (AGESQR) is negative (minus $15.93), indicating a slowing of income growth as age increases. The coefficient of HIGHGRAD is positive, indicating that each additional year of postgraduate study adds $1,165 to predicted earnings. The coefficients for WEEKS (worked per year) and HOURS (worked per average week) are both positive, adding $703 and $319, respectively, to predicted earnings.

The t-statistics for MGMT, PROF, SALES, RURAL, GENDER, AGE, AGESQR, WEEKS, and HOURS each indicate statistical significance beyond the .01 level. The t-statistic for HIGHGRAD is significant beyond the .05 level. The t-statistic for ETHNICITY is significant beyond the .10 level. The t-statistic for TEACHER is not significant ($p < .35$). The remaining variables were the state of residence dummy variables. Because of the small number of observations from Alabama, this state was not explicitly defined in the model (i.e., it was defined implicitly). The only one of these coefficients of explicitly implied state variables that approached significance was for Mississippi, and its coefficient is negative (loss of $4,830, $t = -1.754$, $p < .08$). Despite the lack of good fit of the other state variables and the TEACHer variable, these variables were retained in the regression equation because: 1) the adjusted $R^2$ indicates that inclusion of these variables

did increase the overall explanatory power of the equation statistic and 2) the ability to generate state-specific predicted earnings is a positive feature of the model.

Application of the Regression Model

The regression model was used to estimate the income that teachers in the Southeast could earn in nonteaching occupations. This amount may be interpreted as the target, which would make the average teacher salary competitive with the salaries of occupations of other college graduates. The regression equation produces an income estimate relevant for the 1988-89 school year (more precisely, for the 12 months ending March 1989). Because education policymakers need information regarding competitive teacher salary levels for the future, the growth trend of nonteacher earnings for 1982-1989 was applied to the March 1989 earnings estimate to produce forecasts for subsequent years through 1992.

To produce estimates of competitive teacher salary levels, the work week and year were set to the typical 40-hour work week and 52 weeks per year. The education and age (as a proxy for experience) characteristics typical of public school teachers in the Southeast (as provided in Table 3) were entered into the regression model. Values for the occupational category variables were entered into the model at levels representing the relative proportions of each of these occupational categories within each state. Values for the variables indicating gender, race, and urban/rural residence were entered into the equation according to the average value of such variables for the nonteachers in the data set.

Using values of gender and race variables characteristic of present teachers was considered, but that approach was rejected for two reasons. First, the teacher work force includes more blacks and women than the general college-educated work

force. In the nonteacher market, blacks and women earn significantly less than whites and males. Use of the teacher work force proportions of blacks and women as variable values in the regression equation would have resulted in a salary schedule with lower amounts than those derived for this report. This bias is inconsistent with established public policy. The fact that women and blacks earn less than other college-educated workers is at least partially due to past practices of discrimination in employment. Stated public policy now eliminates such discrimination. It would be inappropriate to recommend that teacher compensation policies in the South be established on a basis that derives financial savings to government for racial and sexual discrimination. The second reason for using nonteacher gender and racial characteristics, rather than teacher characteristics in the model, concerns the internal economic logic of the model. Women and blacks are more highly represented in the teacher work force because past practices made alternative occupations either impossible or unattractive. To use the proportions of women and blacks presently found in the teacher work force would introduce an element of circularity into the model and include recommendations designed to maintain the status quo.

Table 11 shows the results derived from the regression model and projected for the 1992 school year for the region and for each state in the region. The amounts are presented in pairs. The larger of each pair represents the earnings estimate calculated on a 12-month basis. The smaller amount represents the earnings estimate calculated on a 10-month basis. The amounts represent the estimated average earnings that persons possessing the education and experience characteristic of teachers could find in nonteaching occupations.

Table 11
Estimated Earnings Alternatives
for Public School Teachers
1992

| | Earnings in Occupations other than Teaching |
|---|---|
| Southeast | **$32,922**<br>$39,507 |
| Alabama | **$32,393**<br>$38,871 |
| Florida | **$31,533**<br>$37,839 |
| Georgia | **$35,414**<br>$42,497 |
| Mississippi | **$28,006**<br>$33,607 |
| North Carolina | **$30,676**<br>$36,811 |
| South Carolina | **$30,331**<br>$36,397 |

**Note:** Figures printed in boldface are based on earnings for a 10-month period. Nonbold figures are based on earnings for a 12-month period. A fully competitive market-sensitive average teacher salary would fall within this range.

The estimated earnings alternatives in Table 11 are homogeneous and should be interpreted cautiously for several reasons. First, there are small numbers of observations in some states. For example, the regression equation implies that average salaries in Alabama should be near the regional average to compete with the nonteacher occupation market. In addition, all of the regression coefficients for individual state instrumental variables showed relatively low statistical significance and added little to the explanatory power of the equation. In

general, the regional composite represents a more accurate basis for estimation of alternative earnings than the state-specific estimations.

The contractual work year of a public school teacher is typically 10 months per year; most other college-graduate workers are employed on a 12-month basis. Because of this difference, it is sometimes argued that teacher salaries could be only 10/12ths of other salaries to be equivalent. That argument ignores the possibility that many workers may not value 2 months of "leisure" highly enough to forego 2/12ths of their pay. This possibility is important if the goal of public policy is to make the teaching profession monetarily competitive with other occupations requiring similar education and experience. Excellent teaching requires study and preparation during the summer even though classes are not in session and the teacher is not required to work at the school building. The 10/12ths view of teacher employment ignores the full dimensions of teachers' professional responsibilities and activities. For these reasons, it is recommended that the full 12-month equivalent earnings alternative derived from the regression model be used as the target for teacher salary improvement.

By varying the values of education and age in the regression equation, the model can be used to derive a set of earnings estimates that constitute a competitive salary scale for teachers. The salary scale, shown in Table 12, provides the variation in teachers' salaries that should exist in relation to education and experience to make teaching competitive with other occupations. The amounts in the table are presented as pairs: the larger amount represents a 12-

month salary basis, and the smaller amount (**in bold**) represents a 10-month salary basis. Each pair of figures represents an appropriate salary range, given various levels of experience and education. For example, the table indicates that the beginning salary for a person with a baccalaureate degree should be between $19,089 and $22,906 in 1991-92 to be equivalent to earnings opportunities in other occupations. For a teacher with 10 years of experience and a master's degree, the competitive salary range would be between $29,534 and $35,441.

Table 12
Competitive Teacher Salary Scale for 1991-92

| Education Level | Years of Experience | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 | 5 | 10 | 15 | 20 | 25 | 30 |
| B.S./B.A. | **$19,089** | **$23,596** | **$27,361** | **$30,382** | **$32,659** | **$34,193** | **$34,984** |
| Only | $22,906 | $28,316 | $32,833 | $36,458 | $39,191 | $41,032 | $41,981 |
| B.S./B.A. | **$20,175** | **$24,683** | **$28,447** | **$31,468** | **$33,746** | **$35,280** | **$36,071** |
| +18 hours | $24,210 | $29,620 | $34,137 | $37,762 | $40,495 | $42,336 | $43,285 |
| M.S./M.A. | **$22,348** | **$25,770** | **$29,534** | **$32,555** | **$34,832** | **$36,367** | **$37,157** |
| completed | $26,818 | $30,924 | $35,441 | $39,066 | $41,799 | $44,640 | $44,589 |
| M.S./M.A. | **$23,072** | **$27,218** | **$30,983** | **$34,004** | **$36,282** | **$38,093** | **$38,607** |
| +24 hours | $27,687 | $32,662 | $37,180 | $40,805 | $43,538 | $45,712 | $46,328 |
| Doctorate | **$23,435** | **$27,943** | **$31,707** | **$34,728** | **$37,006** | **$38,540** | **$39,331** |
| completed | $28,122 | $33,531 | $38,049 | $41,674 | $44,407 | $46,248 | $47,197 |

**Note:** Figures printed in boldface are based on earnings for a 10-month period, the length of a typical teaching contract. The nonbold figures are based on earnings for a 12-month period.

**Conclusions**

Despite the growth of teachers' salaries over the last seven years in the Southeast and a slower rate of growth for the earnings of other college-educated

workers in the region, salaries are still not competitive enough to ensure the attraction and retention of adequate numbers of qualified teachers. As long as there is an adequate supply of qualified teachers, this is not a problem. However, a recent study has indicated there is a dwindling supply of recent education graduates in the Southeast entering teaching and an increasing draw on the nebulous teacher reserve pool in the region (Cartledge and Halverson, 1989). This is being compounded by lack of interest in teaching by middle school through high school-age students (Berry, McCormick, & Buxton, 1989), especially by minority students (Blackwater Associates, Inc., 1989).

A competitive average teacher salary amount in the region in 1991-92 would be about 43 percent higher than the actual regional average teacher salary level in 1989-90. State and local governments in the region cannot be expected to increase salaries enough in a single year to correct such a large deficit. Progress has been made, but recent gains in teacher salaries must be continued. During the 1982-83 through 1989-90 period, average teacher salaries grew at a rate of approximately 6.78 percent increase each year. Even maintaining this growth rate for teachers and with the earnings of nonteachers continuing to grow at the recent lower rate of only 4.56 percent per year, it would take 13 more years (until 2002-03) to close the gap between teachers' salaries and the earnings opportunities in competing occupations. It would take four years at this level of commitment (until 1993-94) just to achieve the lower end of the competitive range indicated by the 10-month salary equivalency.

The problem may be compounded by the recent declining commitment to further raise teacher salaries in the Southeast. Most of the average 6.78 percent per year increase since 1982-83 was due to a 12.04 percent regional teacher salary increase for the 1984-85 school year and an 8 percent increase the following year.

Since that time, the percentage of teacher salary increase has been at or below this average of 6.78 percent.

To achieve competitive levels of teacher salaries will require commitment and perseverance. It will require commitment to a competitive salary goal and commitment to a significant, but practical, rate of annual salary increases for teachers. It will require perseverance to continue a high rate of salary growth every year for a number of years because the costs would be too great to assume within one, two, or even five years. However, as an example, a 10 percent increase in teacher salaries each year may be a practical goal for many, if not most, southeastern states. If the states in the region commit themselves to a 10 percent annual increase in teacher salaries beginning with the 1991-92 school year, full parity with the forecasted 12-month average earnings of nonteachers could be reached by the 1995-96 school year (i.e., within five years). Thereafter, relatively smaller annual increases would keep teacher salaries at the competitive level.

Table 13 shows estimates of increases in educational expenditures for public school teachers that each of the southeastern states would need to finance to reach 10/12ths, 90 percent, or 100 percent parity of teacher salaries with the 12-month full-time earnings opportunities of college graduates in occupations other than teaching. The estimates are based on comparisons of 1988-89 base-year teacher salaries, numbers of teachers, and alternative earnings opportunities within each state. They do not include years of experience, assuming these to be uniform across states. Any additional impact of inflation would make the actual

requirements for future years higher. These figures provide only an estimate of the total additional expenditures needed for teacher salaries to reach parity with

Table 13

Additional Expenditures Necessary to Reach Teacher Pay Parity Targets

| | 10/12 Parity | 90 Percent Parity | 100 Percent Parity |
|---|---|---|---|
| Alabama | $131,010,000 | $222,478,800 | $359,682,000 |
| Florida | $ ----- | $104,533,095 | $449,203,878 |
| Georgia | $188,493,510 | $345,946,262 | $582,125,390 |
| Mississippi | $ 3,690,388 | $ 57,600,315 | $138,465,204 |
| North Carolina | $ ----- | $ 73,541,037 | $276,329,912 |
| South Carolina | $ ----- | $ 73,328,066 | $189,025,074 |
| Regional Totals | $323,193,898 | $877,427,575 | $1,994,831,458 |

the salaries of other college-educated workers in each state and in the region. However, the size of these estimates indicates that a significant proportion of public resources would be needed for most states to reach each of these teacher wage parity targets, except for the 10/12ths salary level.

Table 14 presents only the additional state expenditures needed to reach parity by 1992, assuming that teacher salaries will continue to increase at the annual rate of 6.78 for both the 1990-91 and 1991-92 school years, as has occurred during the last seven years. In other words, this table presents only that additional fiscal effort that would be necessary to achieve the indicated parity levels over the next two years.

Table 14

Additional Expenditures Necessary to Reach
Teacher Pay Parity Targets in 1992

| | 10/12 Parity | 90 Percent Parity | 100 Percent Parity |
|---|---|---|---|
| Alabama | $131,704,750 | $234,583,330 | $388,901,200 |
| Florida | $ ----- | $128,294,877 | $522,301,032 |
| Georgia | $220,713,808 | $400,702,769 | $670,686,210 |
| Mississippi | $ 6,211,772 | $ 67,838,048 | $160,277,462 |
| North Carolina | $ ----- | $ 89,227,861 | $321,041,452 |
| South Carolina | $ ----- | $ 86,638,309 | $218,894,088 |
| Regional Totals | $569,615,118 | $1,007,285,194 | $2,282,101,364 |

As can be seen in Table 14, most states are already on target to reach the 10/12ths parity level. However, to reach true parity by 1992 would require an additional expenditure of over $2.28 billion in teacher salary enhancements.

It should be noted that beginning teacher salaries are already near or within the indicated range for most states in the Southeast. However, as was demonstrated by the increasing differences in compensation across age cohorts, there is a need for compensation policies that provide more latitude for income growth during the professional career of a teacher. Without such policies, retention may become an even more serious problem than the recruitment of teachers.

The key to successfully making teacher pay competitive is commitment to a long-term strategy of planned increases. There can be no one-year, quick solution. States should identify a practical rate of annual salary growth and

adopt a firm plan to continue that annual growth for the number of years needed to achieve the goal of a competitive teacher salary level.

Higher teacher salaries alone will not guarantee better schools. Improvement of public education requires creative efforts on many fronts. However, improved salaries are important because human resources are the critical element in all education reform strategies. No strategy of improvement is likely to succeed unless sufficient compensation is offered to attract and retain the calibre of talented and hard-working people needed to successfully implement quality educational programs.

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Appendix A
Comparison of CPS Data Set Characteristics:
Southeastern Region, 1983 - 1989

| | Teachers | | | | | | | Other College-Educated Workers | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year of CPS Dataset: | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 |
| Number of Observations | N/A | N/A | 191 | 203 | 210 | 198 | 227 | N/A | N/A | 991 | 1,167 | 1,244 | 1,180 | 1,152 |
| Average Age (in years) | 39.2 | 38.3 | 38.7 | 39.0 | 39.5 | 38.2 | 39.6 | 38.7 | 39.4 | 39.2 | 38.6 | 38.5 | 38.3 | 37.9 |
| Gender (percent female) | 78.8 | 79.1 | 79.1 | 77.0 | 71.0 | 76.8 | 76.6 | 30.7 | 31.7 | 31.1 | 32.0 | 32.0 | 33.1 | 36.5 |
| Ethnicity (percent black) | 21.4 | 20.3 | 20.9 | 24.0 | 24.0 | 22.2 | 25.6 | 12.0 | 11.3 | 11.9 | 9.0 | 10.0 | 10.7 | 9.7 |
| Residence (percent rural) | 41.6 | 40.4 | 37.9 | 35.0 | 38.0 | 36.9 | 41.4 | 30.3 | 27.7 | 29.0 | 21.0 | 20.0 | 19.2 | 18.1 |
| Education Level (above B.S.) | 0.7 | 0.9 | 0.9 | 0.9 | 0.9 | 0.8 | 0.8 | 0.6 | 0.5 | 0.7 | 0.6 | 0.6 | 0.6 | 0.7 |

Sources: U. S. Bureau of the Census, Current Population Survey, machine-readable data files, March 1984-1990.